ABSTRACT OF THE DISCLOSURE

A semiconductor diode with hydrogen detection capability includes a semiconductor substrate, a doped semiconductor active layer formed on the substrate and made from a compound having the formula XYZ, in which X is a Group III element, Y is another Group III element different from X, and Z is a Group V element, an ohmic contact layer formed on the active layer, and a Schottky barrier contact layer formed on the active layer so as to provide a Schottky barrier therebetween. The Schottky barrier contact layer is made from a metal that is capable of dissociating a hydrogen molecule into hydrogen atoms.